

Claims

What is claimed is:

1. A method of accessing a first file on a disk system on one of a plurality of computer systems from a program executing on another of the plurality of computer systems, wherein:
the plurality of computer systems comprises:
 - a first computer system containing the program communicating through an API with a first interface system, and
 - a second computer system containing the disk system and a second interface system for communicating with the first interface system and for reading from and writing to the disk system;the first computer system and the second computer system are heterogeneous computer systems;
said method comprising:
 - A) opening a first session from the program via the API through the first interface system to the second interface system in order to access the first file on the disk system;
 - B) blocking the first plurality of records into a first plurality of blocks;
 - C) transmitting the first plurality of blocks over the first session from a first one of the plurality of computer systems to a second one of the plurality of computer systems;
 - D) unblocking the first plurality of blocks into a second plurality of records on the second one of the plurality of computer systems;
and
 - E) closing the first session after completing the transmitting in step (C).

1 2. The method in claim 1 wherein:
2 the first computer system is the first of the plurality of computer
3 systems;
4 the second computer system is the second of the plurality of computer
5 systems; and
6 the method further comprises:
7 F) receiving the first plurality of records via the API from
8 the program; and
9 G) writing the second plurality of records to the first file.

1 3. The method in claim 1 wherein:
2 the first computer system is the second of the plurality of computer
3 systems; and
4 the second computer system is the first of the plurality of computer
5 systems;
6 the method further comprises:
7 F) reading the first plurality of records from the first file;
8 and
9 G) receiving the second plurality of records in the program
10 via the API.

1 4. The method in claim 1 wherein:
2 the transmitting in step (C) utilizes a credit based flow control
3 mechanism to flow control the first plurality of blocks; and
4 the credit based flow control mechanism utilizes a block based credit
5 counting each of the first plurality of blocks a one credit.

1 5. The method in claim 1 which further comprises:
2 F) opening a second session from the program via the API through
3 the first interface system to the second interface system in order
4 to access a second file on the disk system while the first session
5 is still open;
6 G) blocking a third plurality of records into a second plurality of
7 blocks;
8 H) transmitting the second plurality of blocks over the second session
9 from a third one of the plurality of computer systems to a fourth
10 one of the plurality of computer systems;
11 I) unblocking the second plurality of blocks into a fourth plurality of
12 records on the fourth one of the plurality of computer systems;
13 and
14 J) closing the second session after completing the transmitting
15 closing the second session after completing the transmitting
16 over the second session in step (H).

1 6. The method in claim 5 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the third one of the plurality of computer systems;
4 the second computer system is the second one of the plurality of
5 computer systems and the fourth one of the plurality of
6 computer systems; and
7 the method further comprises:
8 K) receiving the first plurality of records via the API from
9 the program for transmission over the first session;
10 L) receiving the third plurality of records via the API from
11 the program for transmission over the second session;
12 M) writing the second plurality of records to the first file;
13 and
14 N) writing the fourth plurality of records to the second file.

1 7. The method in claim 5 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the fourth one of the plurality of computer
4 systems;
5 the second computer system is the second one of the plurality of
6 computer systems and the third one of the plurality of computer
7 systems; and
8 the method further comprises:
9 K) receiving the first plurality of records via the API from
10 the program for transmission over the first session;
11 L) writing the second plurality of records to the first file;
12 M) reading the third plurality of records from the second file;
13 and
14 N) receiving the fourth plurality of records in the program
15 via the API.

1 8. The method in claim 1 wherein:
2 the first computer system is a mainframe computer system; and
3 the second computer system is a UNIX based computer system.

1 9. The method in claim 1 wherein:
2 character data is stored in the first computer system in a first one of a
3 plurality of character formats;
4 character data is stored in the second computer system in a second one
5 of a plurality of character formats; and
6 the method further comprises:
7 F) translating at least a portion of each of the records in the first
8 plurality of blocks from one of the plurality of character
9 formats to another one of the plurality of character formats.

1 10. The method in claim 1 wherein:
2 integer data is stored in the first computer system in a first one of a
3 plurality of integer formats;
4 integer data is stored in the second computer system in a second one
5 of a plurality of integer formats; and
6 the method further comprises:
7 F) translating at least a portion of each of the records in the first
8 plurality of blocks from one of the plurality of integer formats
9 to another one of the plurality of integer formats.

- 1 11. A data processing system having software stored in a set of Computer
2 Software Storage Media for accessing a first file on a disk system on
3 one of a plurality of computer systems from a program executing on
4 another of the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) a set of computer instructions for opening a first session from the
16 program through the first interface system to the second
17 interface system in order to access the first file on the disk
18 system;
19 B) a set of computer instructions for blocking the first plurality of
20 records into a first plurality of blocks;
21 C) a set of computer instructions for transmitting the first plurality of
22 blocks over the first session from a first one of the plurality of
23 computer systems to a second one of the plurality of computer
24 systems;
25 D) a set of computer instructions for unblocking the first plurality of
26 blocks into a second plurality of records on the second one of
27 the plurality of computer systems; and
28 E) a set of computer instructions for closing the first session after
29 completing the transmitting in set (C).

1 12. The software in claim 11 wherein:
2 the first computer system is the first of the plurality of computer
3 systems;
4 the second computer system is the second of the plurality of computer
5 systems; and
6 the software further comprises:
7 F) a set of computer instructions for receiving the first
8 plurality of records via the API from the program; and
9 G) a set of computer instructions for writing the second
10 plurality of records to the first file.

1 13. The software in claim 11 wherein:
2 the first computer system is the second of the plurality of computer
3 systems; and
4 the second computer system is the first of the plurality of computer
5 systems;
6 the software further comprises:
7 F) a set of computer instructions for reading the first
8 plurality of records from the first file; and
9 G) a set of computer instructions for receiving the second
10 plurality of records in the program via the API.

1 14. The software in claim 11 wherein:
2 the transmitting in set (C) utilizes a credit based flow control
3 mechanism to flow control the first plurality of blocks; and
4 the credit based flow control mechanism utilizes a block based credit
5 counting each of the first plurality of blocks a one credit.

- 1 15. The software in claim 11 which further comprises:
2 F) a set of computer instructions for opening a second session from
3 the program via the API through the first interface system to the
4 second interface system in order to access a second file on the
5 disk system while the first session is still open;
6 G) a set of computer instructions for blocking a third plurality of
7 records into a second plurality of blocks;
8 H) a set of computer instructions for transmitting the second plurality
9 of blocks over the second session from a third one of the
10 plurality of computer systems to a fourth one of the plurality of
11 computer systems;
12 I) a set of computer instructions for unblocking the second plurality
13 of blocks into a fourth plurality of records on the fourth one of
14 the plurality of computer systems; and
15 J) a set of computer instructions for closing the second session after
16 completing the transmitting closing the second session after
17 completing the transmitting over the second session in set (H).

- 1 16. The software in claim 15 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the third one of the plurality of computer systems;
4 the second computer system is the second one of the plurality of
5 computer systems and the fourth one of the plurality of
6 computer systems; and
7 the software further comprises:
8 K) a set of computer instructions for receiving the first
9 plurality of records via the API from the program for
10 transmission over the first session;
11 L) a set of computer instructions for receiving the third
12 plurality of records via the API from the program for
13 transmission over the second session;
14 M) a set of computer instructions for writing the second
15 plurality of records to the first file; and
16 N) a set of computer instructions for writing the fourth
17 plurality of records to the second file.

1 17. The software in claim 15 wherein:
2 the first computer system is the first one of the plurality of computer
3 systems and the fourth one of the plurality of computer
4 systems;
5 the second computer system is the second one of the plurality of
6 computer systems and the third one of the plurality of computer
7 systems; and
8 the software further comprises:
9 K) a set of computer instructions for receiving the first
10 plurality of records via the API from the program for
11 transmission over the first session;
12 L) a set of computer instructions for writing the second
13 plurality of records to the first file;
14 M) a set of computer instructions for reading the third
15 plurality of records from the second file; and
16 N) a set of computer instructions for receiving the fourth
17 plurality of records in the program via the API.

1 18. The software in claim 11 wherein:
2 the first computer system is a mainframe computer system; and
3 the second computer system is a UNIX based computer system.

1 19. The software in claim 1 wherein:
2 character data is stored in the first computer system in a first one of a
3 plurality of character formats;
4 character data is stored in the second computer system in a second one
5 of a plurality of character formats; and
6 the software further comprises:
7 F) a set of computer instructions for translating at least a portion of
8 each of the records in the first plurality of blocks from one of
9 the plurality of character formats to another one of the plurality
10 of character formats.

1 20. The software in claim 1 wherein:
2 integer data is stored in the first computer system in a first one of a
3 plurality of integer formats;
4 integer data is stored in the second computer system in a second one
5 of a plurality of integer formats; and
6 the software further comprises:
7 F) a set of computer instructions for translating at least a portion of
8 each of the records in the first plurality of blocks from one of
9 the plurality of integer formats to another one of the plurality of
10 integer formats.

- 1 21. A computer readable Non-Volatile Storage Medium encoded with
2 software for accessing a first file on a disk system on one of a
3 plurality of computer systems from a program executing on another of
4 the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) a set of computer instructions for opening a first session from the
16 program through the first interface system to the second
17 interface system in order to access the first file on the disk
18 system;
19 B) a set of computer instructions blocking the first plurality of records
20 into a first plurality of blocks;
21 C) a set of computer instructions for transmitting the first plurality of
22 blocks over the first session from a first one of the plurality of
23 computer systems to a second one of the plurality of computer
24 systems;
25 D) a set of computer instructions for unblocking the first plurality of
26 blocks into a second plurality of records on the second one of
27 the plurality of computer systems; and
28 E) a set of computer instructions for closing the first session after
29 completing the transmitting in set (C).

- 1 22. A data processing system having software stored in a set of Computer
2 Software Storage Media for accessing a first file on a disk system on
3 one of a plurality of computer systems from a program executing on
4 another of the plurality of computer systems, wherein:
5 the plurality of computer systems comprises:
6 a first computer system containing the program communicating
7 through an API with a first interface system, and
8 a second computer system containing the disk system and a
9 second interface system for communicating with the first
10 interface system and for reading from and writing to the
11 disk system;
12 the first computer system and the second computer system are
13 heterogeneous computer systems;
14 said software comprising:
15 A) means for opening a first session from the program through the
16 first interface system to the second interface system in order to
17 access the first file on the disk system;
18 B) means for blocking the first plurality of records into a first plurality
19 of blocks;
20 C) means for transmitting the first plurality of blocks over the first
21 session from a first one of the plurality of computer systems to
22 a second one of the plurality of computer systems;
23 D) means for unblocking the first plurality of blocks into a second
24 plurality of records on the second one of the plurality of
25 computer systems; and
26 E) means for closing the first session after completing the transmitting
27 in means (D).